

U.S. Appl. No. 09/726,867
Reply to Office Action dated June 12, 2006

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IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (Previously Presented) A broadcasting system comprising:
a broadcasting station for broadcasting digital content containing attribute information indicating an attribute thereof and an electronic program guide (EPG); and
a plurality of reception apparatuses having reception means for receiving said digital content and said attribute information broadcast from the broadcasting station, a recording medium for recording the received digital contents and the received attribute information, output means for outputting the received digital contents, and selection means for allowing a user to select the digital contents via a filtering process by comparing selection information indicating user preferences with attribute information assigned to the digital contents,
wherein said user activates or deactivates the filtering process at any time, otherwise a controlling unit automatically activates or deactivates the filtering process;
wherein while the controlling unit displays the EPG, said plurality of reception apparatuses modify the EPG's program titles in accordance with the user's selection such that when a program matches the selection information and the attribute information, the controlling unit displays the title information indicating the program title in a different state from the other program titles;
said plurality of reception apparatuses store said digital contents that match said user preferences even if said user does not reserve said digital contents;

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said attribute information is expressed with an n-dimensional vector A comprising attribute items as elements each indicative of attribute intensities for the digital content;

said selection information is expressed with an n-dimensional vector S comprising user preference items as elements each indicative of preference intensities;

item types and orders for said attribute information and said selection information correspond to an attribute information's vector A and a selection information's vector S;

said plurality of reception apparatuses include selection means for performing an inner product operation between the attribute information's vector A and the selection information's vector S, and determines whether to select the digital content based on the result of the inner product operation; and

wherein said controlling unit computes said attribute information of the digital contents replayed by said user, analyzes said user's taste and based on the analysis, modifies a weight of each parameter of said selection information to optimize the selection information for said user.

2. (Previously Presented) The broadcasting system according to claim 1, wherein the selection means of each of said plurality of reception apparatuses finds a selection value P based on the following equation and selects the digital content based on a size of the selection value P as follows:

$$A = (a_1, a_2, a_3, \dots, a_n)$$

$$S = (s_1, s_2, s_3, \dots, s_n)$$

$$P = \frac{A \cdot S}{|A| \cdot |S|}$$

where

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$$A \cdot S = \sum_{k=1}^n a_k S_k$$

$$|A| = \sqrt{\sum_{k=1}^n a_k^2}$$

$$|S| = \sqrt{\sum_{k=1}^n S_k^2}$$

in which neither A nor S is a zero vector.

3. (Previously Presented) The broadcasting system according to claim 1, wherein said selection information's vector S is found from a vector A of attribute information attached to a plurality of digital contents selected by the user.

4. (Previously Presented) The broadcasting system according to claim 3, wherein said selection information's vector S is found according to the following equation:

$$S = \frac{1}{M} \sum_{k=1}^M A_k$$

where M is assumed to be a number of digital contents selected by the user and an attribute vector for the K-th digital content selected by the user is assumed to be: $A_k = (a_{1k}, a_{2k}, a_{3k}, \dots, a_{nk})$.

5. (Previously Presented) The broadcasting system according to claim 3, wherein said selection information's vector S is found according to the following equation:

$$S = \frac{1}{M} \sum_{k=L-M+1}^L A_k$$

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where M is assumed to be a number of windows for finding a vector S , L is assumed to be a start point for selecting the plurality of digital contents for finding the vector S , and an attribute vector for the K -th digital content selected by the user is assumed to be: $A_k = (a_{1k}, a_{2k}, a_{3k}, \dots, a_{nk})$.

6. (Previously Presented) The broadcasting system according to claim 3, wherein said selection information's vector S is found by averaging vectors A for attribute information attached to the plurality of digital contents reproduced by the user for a specified time.

7. (Previously Presented) The broadcasting system according to claim 3, wherein said selection information's vector S is found by averaging vectors A for attribute information attached to the plurality of digital contents reserved by the user.

8. (Previously Presented) The broadcasting system according to claim 3, wherein said selection information's vector S is found by averaging vectors A for attribute information attached to the plurality of digital contents reproduced by the user for a specified time, averaging vectors A for attribute information attached to the plurality of digital contents reserved by the user, assigning a weight to each average, and combining the weights.

9. (Previously Presented) The broadcasting system according to claim 1, wherein the selection means of each of said plurality of reception apparatuses selects the digital content based on a vector S of the selection information corresponding to a plurality of users.

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10. (Previously Presented) A reception apparatus comprising:

reception means for receiving digital content containing electronic program guide (EPG) and attribute information broadcast from a broadcasting station via a plurality of reception apparatuses;

a recording medium for recording the received digital content and the attribute information;

output means for outputting the received digital content; and

selection means for allowing a user to select the digital content via a filtering process by comparing selection information indicating user preferences with attribute information attached to the digital content,

wherein said user activates or deactivates the filtering process at any time, otherwise a controlling unit automatically activates or deactivates the filtering process;

wherein while the controlling unit displays the EPG, said plurality of reception apparatuses modify the EPG's program titles in accordance with the user's selection such that when a program matches the selection information and the attribute information, the controlling unit displays the title information indicating the program title in a different state from the other program titles;

said plurality of reception apparatuses store said digital content that match said user preferences even if said user does not reserve said digital content;

said attribute information is expressed with an n-dimensional vector A comprising attribute items as elements each indicative of attribute intensities for the digital content;

said selection information is expressed with an n-dimensional vector S comprising user preference items as elements each indicative of preference intensities;

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item types and orders for said attribute information and said selection information correspond to an attribute information's vector A and a selection information's vector S;

said selection means performs an inner product operation between the attribute information's vector A and the selection information's vector S, and determines whether to select the digital content based on the result of the inner product operation; and

wherein said controlling unit computes said attribute information of the digital contents replayed by said user, analyzes said user's taste and based on the analysis, modifies a weight of each parameter of said selection information to optimize the selection information for said user.

11. (Previously Presented) The reception apparatus according to claim 10, wherein said selection means finds a selection value P based on the following equation and selects the digital content based on a size of the selection value P as follows:

$$A = (a_1, a_2, a_3, \dots, a_n)$$

$$S = (s_1, s_2, s_3, \dots, s_n)$$

$$P = \frac{A \cdot S}{|A| \cdot |S|}$$

where

$$A \cdot S = \sum_{k=1}^n a_k S_k$$

$$|A| = \sqrt{\sum_{k=1}^n a_k^2}$$

$$|S| = \sqrt{\sum_{k=1}^n S_k^2}$$

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in which neither A nor S is a zero vector.

12. (Previously Presented) The reception apparatus according to claim 10, wherein said selection information's vector S is found from a vector A of attribute information attached to a plurality of digital contents selected by the user.

13. (Previously Presented) The reception apparatus according to claim 12, wherein said selection information's vector S is found according to the following equation:

$$S = \frac{1}{M} \sum_{k=1}^M A_k$$

where M is assumed to be a number of digital contents selected by the user and an attribute vector for the K-th digital content selected by the user is assumed to be: $A_k = (a_{1k}, a_{2k}, a_{3k}, \dots, a_{nk})$.

14. (Previously Presented) The reception apparatus according to claim 12, wherein said selection information's vector S is found according to the following equation:

$$S = \frac{1}{M} \sum_{k=L-M+1}^L A_k$$

where M is assumed to be a number of windows for finding a vector S, L is assumed to be a start point for selecting the plurality of digital contents for finding the vector S, and an attribute vector for the K-th digital content selected by the user is assumed to be: $A_k = (a_{1k}, a_{2k}, a_{3k}, \dots, a_{nk})$.

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15. (Previously Presented) The reception apparatus according to claim 12, wherein said selection information's vector S is found by averaging vectors A for attribute information attached to the plurality of digital contents reproduced by the user for a specified time.

16. (Previously Presented) The reception apparatus according to claim 12, wherein said selection information's vector S is found by averaging vectors A for attribute information attached to the plurality of digital contents reserved by the user.

17. (Previously Presented) The reception apparatus according to claim 12, wherein said selection information's vector S is found by averaging vectors A for attribute information attached to the plurality of digital contents reproduced by the user for a specified time, averaging vectors A for attribute information attached to the plurality of digital contents reserved by the user, assigning a weight to each average, and combining the weights.

18. (Previously Presented) The reception apparatus according to claim 10, wherein said selection means selects the digital content based on a vector S of the selection information corresponding to a plurality of users.